

## **Land Use Analysis**

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### **Introduction**

This section of the FAR Part 150 Noise Exposure and Land Use Compatibility Study for King County International Airport deals with the evaluation of land uses within both the existing (1999) and future noise contours (2006).

The development of realistic and effective alternatives is the focus of the FAR Part 150 noise compatibility planning process, with the overall objective being to explore a wide range of feasible alternatives of land use patterns, noise control actions and noise impact patterns. Solutions are explored which may accommodate both airport users and inhabitants, as well as environmental parameters. As a prelude to analyzing future noise exposure impacts resulting from changes in noise contours, an examination of existing conditions in terms of areas and persons affected by the existing noise contours is presented here. The following section deals with the types of land uses affected by the existing noise contours and the approximate number of persons within the designated noise contours. A subsequent section deals with these same items, but as they are affected by the future noise contours.

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### **Existing Land Use Analysis/Existing Noise Contours, 1999**

This section discusses the land use types found within the existing noise contours generated by aircraft utilizing King County International Airport. The existing situation is represented by five contours, the DNL 55, 60, 65, 70 and 75 contours. An FAR Part 150 Study utilizes the DNL 65 contour as the threshold contour for land use analysis. However, this Study will present very generalized housing units and population information for the 55 and 60 also. It must be remembered that the total figures given below are cumulative. The figures for the larger contours contain the area within all smaller contours; i.e., the DNL 65 contour area includes the area representing the 70 and 75 contours.

The DNL 55 contour is the largest and contains approximately thirteen thousand eight hundred eighty-three (13,883) acres. There are approximately 16,568 housing units representing approximately 40,592 persons, based on average 2.45 persons per household, within the contour.

The DNL 60 contour is the next largest and contains approximately five thousand four hundred thirty-six (5,436) acres. There are approximately 4,918 housing units representing approximately 12,049 persons within the contour.

The DNL 65 contour is the next largest and contains approximately two thousand two hundred sixty-five (2,265) acres. There are approximately 1,327 housing units representing approximately 3,251 persons within the contour. This represents approximately two hundred ninety (290) acres of residential development, mostly known as the Georgetown community. There are approximately one hundred forty-four (144) acres of commercial/retail development, and approximately six hundred fifty-five (655) acres of manufacturing/industrial development within the contour. The remaining property consists of airport property, transportation rights-of-way and open space. There is one historical site listed on the National Register (Georgetown Steam Plant) within the 65 DNL noise contour.

The DNL 70 is the next largest noise contour and contains approximately eight hundred seventy-five (875) acres. There are approximately 158 housing units representing approximately 387 persons within the contour, occurring on approximately forty (40) acres of residential land use. There are approximately two hundred ten (210) acres of manufacturing land use and approximately fifty-five (55) acres of commercial/retail land use. There is one historical site listed on the National Register (Georgetown Steam Plant) within the 65 DNL noise contour. There are no schools within the 70 DNL contour.

The DNL 75 is the smallest contour. It contains approximately four hundred twelve (412) acres. There is no residential development within the contour. There are approximately forty-nine (49) acres of manufacturing land use. The remaining three hundred sixty-three (363) acres are entirely on airport property.

The existing table, entitled *EXISTING LAND USE WITHIN EXISTING NOISE CONTOURS, 1999* summarizes the above land use information.

Table D1  
**EXISTING LAND USE WITHIN EXISTING NOISE CONTOURS, 1999**  
*King County International Airport FAR Part 150 Study*

<b>Land Use</b>	<b>DNL 55 Contour</b>	<b>DNL 60 Contour</b>	<b>DNL 65 Contour</b>	<b>DNL 70 Contour</b>	<b>DNL 75 Contour</b>
Residential	NA Ac	NA Ac	290 Ac	40 Ac	0 Ac
People	40,592	12,049	3,251	387	0
House. Units	16,568	4,918	1,327	158	0
Schools	NA	NA	0	0	0
Historical Sites	NA	NA	1	1	0
Com/Retail	NA Ac	NA Ac	145 Ac	55 Ac	0 Ac
Manufacture	NA Ac	NA Ac	655 Ac	210 Ac	49 Ac
Other	NA Ac	NA Ac	1,176 Ac	570 Ac	363 Ac
<b>Total</b>	<b>13,883 Ac</b>	<b>5,436 Ac</b>	<b>2,266 Ac</b>	<b>875 Ac</b>	<b>412 Ac</b>

The total figures for each contour are cumulative. The figures for the larger contours contain the area -within all smaller contours.

SOURCE: Aerial Photography, PSRC Housing Data, Field Survey, BDC Analysis

## Existing Land Use Inconsistencies

Land use incompatibility is an area of determination and regulation that is to be resolved solely at the discretion of the local community or by the state. To determine what constitutes land use incompatibility, the individual land use types within particular noise contours need to be defined. The Federal Aviation Administration, through the FAR Part 150 Study, has developed generalized guidelines for land use compatibility for land use planning purposes, as presented earlier. However, these are guidelines and do not automatically define incompatible land uses. Based on these guidelines, the residential land uses and school facilities within the 65 or greater DNL noise contours are inconsistent with these guidelines.

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## **Existing Land Use Analysis/ Future (Base Case, 2006) Noise Contours**

This section discusses the land use types found within the base case future (2006) noise contours generated by aircraft utilizing King County International Airport, assuming that all land uses will remain the same. This is the “base case” which assumes that no operational or facility modifications will occur at the airport, and is reflective of the forecast operations and aircraft types explained previously. This is the situation with which future alternative scenarios will be measured to quantify impacts as compared with the impacts that would occur if not mitigation measures were implemented.

The future base case situation is represented by five contours, the DNL 55, 60, 65, 70 and 75 contours. The DNL 55 contour is the largest and contains approximately seventeen thousand two hundred ninety-one (17,291) acres. There are approximately 21,818 housing units representing approximately 53,454 persons within the contour, based on an average of 2.45 persons per household.

The DNL 60 contour is the next largest and contains approximately six thousand eight hundred ninety (6,890) acres. There are approximately 6,827 housing units representing approximately 16,726 persons within the contour.

The DNL 65 contour is the next largest and contains approximately two thousand eight hundred seventy-two (2,872) acres. There are approximately 1,955 housing units representing approximately 4,790 persons within the contour, representing approximately four hundred sixty-four (464) acres of residential land use. There are approximately eight hundred sixty-four (864) acres of manufacturing/industrial development and approximately three hundred ninety-one (190) acres of commercial/retail development. The remainder of the area is composed of airport property, open space and rights-of-way. There is one historical site listed on the National Register (Georgetown Steam Plant) within the 65 DNL noise contour.

The DNL 70 is the next largest noise contour and contains approximately one thousand one hundred fifty (1,150) acres. There are approximately three hundred fifty-one (351) housing units representing approximately eight hundred sixty (860) people within the contour, occurring on approximately seventy (70) acres of residential development. There are approximately three hundred seven (307) acres of manufacturing/industrial land use and approximately eighty-four (84) acres of commercial/retail land use. There is one historical site listed on the National Register (Georgetown Steam Plant) within the contour.

The DNL 75 is the smallest contour. It contains approximately four hundred eighty-five (485) acres with no residential land use. There are approximately seventy-eight (78) acres of manufacturing/industrial development. The remaining four hundred seven (406) acres are on airport property.

The following table, entitled *EXISTING LAND USE WITHIN FUTURE NOISE CONTOURS, 2006* summarizes the above land use information.

Table D2  
**EXISTING LAND USE WITHIN FUTURE NOISE CONTOURS, 2006**  
*King County International Airport FAR Part 150 Study*

<b>Land Use</b>	<b>DNL 55 Contour</b>		<b>DNL 60 Contour</b>		<b>DNL 65 Contour</b>		<b>DNL 70 Contour</b>		<b>DNL 75 Contour</b>	
Residential	NA	Ac	NA	Ac	464	Ac	70	Ac	0	Ac
People	53,454		16,726		4,790		860		0	
House. Units	21,818		6,827		1,955		351		0	
Schools	NA		NA		0		0		0	
Historical Sites	NA		NA		1		1		0	
Com/Retail	NA	Ac	NA	Ac	190	Ac	84	Ac	0	Ac
Manufacture	NA	Ac	NA	Ac	864	Ac	307	Ac	78	Ac
Other	NA	Ac	NA	Ac	1,354	Ac	689	Ac	407	Ac
<b>Total</b>	<b>17,291</b>	<b>Ac</b>	<b>6,890</b>	<b>Ac</b>	<b>2,872</b>	<b>Ac</b>	<b>1,150</b>	<b>Ac</b>	<b>485</b>	<b>Ac</b>

The total figures for each contour are cumulative. The figures for the larger contours contain the area -within all smaller contours.  
 SOURCE: Aerial Photography, PSRC Census Data, Field Survey, BDC Analysis

### **Future Base Case (2006) Land Use Inconsistencies**

Based on the Federal guidelines, the residential land uses and schools within the 65 or greater DNL noise contours are inconsistent with these guidelines.

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## Existing Land Use Analysis/ Combined Existing Noise Contours

This section discusses the additional number of people and housing units that are within the combined Sea-Tac International Airport and King County International Airport existing noise contours (1999) generated by aircraft utilizing both airports. These are people and housing units that are not affected by the individual contours but are as a result of the combined contours.

The DNL 55 contour is the largest and contains approximately 4,625 additional housing units representing approximately 11,331 additional persons within the contour.

The DNL 60 contour is the next largest and contains approximately 584 additional housing units representing approximately 1,343 additional persons within the contour.

The DNL 65 contour is the next largest and contains approximately 687 additional housing units representing approximately 1,683 additional persons within the contour.

The DNL 70 is the next largest noise contour and contains approximately 196 additional housing units representing approximately 480 additional persons within the contour.

The following table, entitled *ADDITIONAL PEOPLE AND HOUSING WITHIN COMBINED NOISE CONTOURS* summarizes the above information.

Table D3

**ADDITIONAL PEOPLE AND HOUSING WITHIN COMBINED NOISE CONTOURS**  
*King County International Airport FAR Part 150 Study*

<b>Land Use</b>	<b>DNL 55 Contour</b>	<b>DNL 60 Contour</b>	<b>DNL 65 Contour</b>	<b>DNL 70 Contour</b>	<b>DNL 75 Contour</b>
People	11,331	1,343	1,683	480	0
House. Units	4,625	548	687	196	0

SOURCE: Sea-Tac International Airport FAR Part 150, PSRC Census data, Bridgenet International Analysis, BDC Analysis

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## Existing Land Use Analysis/ Combined Future Noise Contours

This section discusses the additional number of people and housing units that are within the combined Sea-Tac International Airport and King County International Airport future noise contours (2006) generated by aircraft utilizing both airports. These are people and housing units that are not affected by the individual contours but are as a result of the combined contours.

The DNL 55 contour is the largest and contains approximately 5,108 additional housing units representing approximately 11,743 additional persons within the contour.

The DNL 60 contour is the next largest and contains approximately 1,066 additional housing units representing approximately 2,451 additional persons within the contour.

The DNL 65 contour is the next largest and contains approximately 367 additional housing units representing approximately 844 additional persons within the contour.

The following table, entitled *ADDITIONAL PEOPLE AND HOUSING WITHIN COMBINED FUTURE NOISE CONTOURS* summarizes the above information.

Table D4

**ADDITIONAL PEOPLE AND HOUSING WITHIN COMBINED FUTURE NOISE CONTOURS**  
*King County International Airport FAR Part 150 Study*

<b>Land Use</b>	<b>DNL 55 Contour</b>	<b>DNL 60 Contour</b>	<b>DNL 65 Contour</b>	<b>DNL 70 Contour</b>	<b>DNL 75 Contour</b>
People	11,743	2,451	844	0	0
House. Units	5,108	1,066	367	0	0

SOURCE: Sea-Tac International Airport FAR Part 150, PSRC Census data, Bridgenet International Analysis, BDC Analysis